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Green

Sustainability and Energy Statement

The Hoxton Hotel Extension
London Borough of Camden

On behalf of
Hoxton (Holborn) Limited

08/10/2015
Job Ref: 5357

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1.0 INTRODUCTION

1.1 This Sustainability and Energy Statement has been prepared by Metropolis Green to accompany the planning application submitted by Hoxton (Holborn) Limited to the London Borough of Camden (LBC) for the proposed extension of the Hoxton Hotel, 199-206 High Holborn, Camden.

1.2 The proposed development has targeted sustainability throughout the lifetime of the building. In particular, energy efficiency measures will be integral to the buildings' design and specification.

1.3 The proposed extension is approximately 186m^2 and is considered minor development, therefore a BREEAM assessment is not deemed feasible given the limited area of the proposed non-residential space. However, sustainable design and construction measures will be applied to the development.

1.4 The high standards of sustainability prescribed by LBC planning policy have been satisfied to the extent feasible at the site.

1.5 This report should be read alongside other supplemental reports prepared by the design team for the planning application.

2.0 SITE DESCRIPTION AND PROPOSED DEVELOPMENT

2.1 Site and Surrounding Area

2.1.1 The subject site is located on the west side of the Hoxton Hotel on Newton Street in the London Borough of Camden. The site is located within the Bloomsbury Conservation Area.

2.1.2 The site is currently vacant, and bound by Newton Street to the north and High Holborn. There is an access road to the west of the site which leads to a service yard behind the hotel; to the east there is a coffee shop with direct street access, which was previously an open colonnade.

2.1.3 The existing building is faced in a variety of fair faced concrete finishes, dark brown brick and dark tinted windows in dark brown aluminium frames.

2.1.4 Buildings adjacent to the site are characterised by a mixture of residential and commercial buildings. There is a post-war residential tower block to the west of the site, and a 1980's building directly opposite, which houses residential units at the upper levels and a lorry loading bay and car park access at the ground floor.

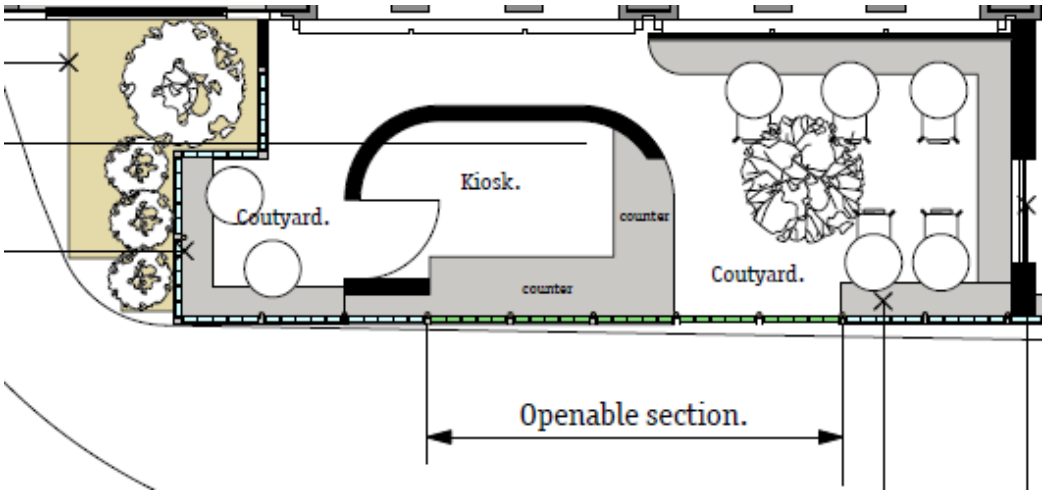
2.2 Proposed Development

2.2.1 The proposed development comprises an extension to the existing Hoxton Hotel to provide a separate pavilion connected to the hotel, featuring additional function rooms and a courtyard which could be accessed from the street.

2.2.2 The purpose of the project is to bring an area of land which does not currently make a positive contribution to the street into use for the hotel. The extension will consist of planting, a courtyard, a food kiosk, a meeting room and an office.

2.2.3 For further details of the proposal, please refer to the Design and Access Statement produced by Gundry and Ducker Architects.

Figure 1 Proposed Development



2.3 Policy Compliance

2.3.1 This Sustainability and Energy Statement details how the design team has considered the site's potential environmental impact and how the applicable sustainability policies and standards can be achieved.

2.3.2 In considering the subject site for the proposed development, it is important in the first instance to apply overarching national policies with respect to sustainable development. It is accepted that at the heart of the NPPF is a presumption in favour of sustainable development, which should be seen as the golden thread running through both plan-making and decision-taking.

2.3.3 Policy CS13 of the Camden Core Strategy seeks to ensure all new development minimises carbon emissions by following the energy hierarchy, makes use of decentralised energy networks and generating renewable energy on site. This policy also states new development should minimise the potential for surface water flooding incorporating efficient water infrastructure.

2.3.4 Policy DM22 of Camden's Development Management Policy sets a BREEAM standard of 'Very Good' for commercial space. However, as the proposed development has a floorspace of approximately 186m^2, a BREEAM assessment will not be feasible due to the limited space. The proposed development will ensure there is reduced water consumption through low flow fixtures and fittings, in line with this policy.

2.3.5 Camden Planning Guidance (CPG3) on sustainability provides further guidance on reducing carbon emissions, in line with policies CS13 and DM22. Within this document it is stated developments should target a 20% reduction in carbon emissions from on-site renewable energy.

2.3.6 As discussed in Section 5.0 of this report, the proposed development can achieve a 29.5% improvement over 2013 Building Regulations, therefore meeting the requirements of LP Policy 5.2 and LBC's Policy CS13.

3.0 POLICY CONTEXT

3.0.1 Sustainable development is a core principle underpinning planning, and has a key role to play in the creation of sustainable communities. In order to ensure the implementation of sustainable development and to determine the targets and standards to be met by the proposed development, it is necessary to review the relevant national, regional and local planning policies with respect to sustainability and the site's location. A summary of the planning policy context for the site and proposed development is provided below.

3.1 National Policy

National Planning Policy Framework, March 2012

3.1.1 The National Planning Policy Framework (NPPF) was published in March 2012 and sets out the Government's planning policies for England, and how these policies are expected to be applied. The policies in the document, taken as a whole, constitute the Government's view of what sustainable development in England means in practice for the planning system.

3.1.2 Fundamentally for the proposed development, paragraph 7 of the NPPF states that:

> There are three dimensions to sustainable development: economic, social and environmental. These dimensions give rise to the need for the planning system to perform a number of roles:
>
> - **an economic role** – contributing to building a strong, responsive and competitive economy, by ensuring that sufficient land of the right type is available in the right places and at the right time to support growth and innovation; and by identifying and coordinating development requirements, including the provision of infrastructure;
> - **a social role** – supporting strong, vibrant and healthy communities, by providing the supply of housing required to meet the needs of present and future generations; and by creating a high quality built environment, with accessible local services that reflect the community's needs and support its health, social and cultural well-being; and
> - **an environmental role** – contributing to protecting and enhancing our natural, built and historic environment; and, as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving to a low carbon economy.

3.1.3 Paragraph 14 of the NPPF states that:

> At the heart of the National Planning Policy Framework is a **presumption in favour of sustainable development**, which should be seen as a golden thread running through both plan-making and decision-taking.
>
> For **decision-taking** this means:
>
> - approving development proposals that accord with the development plan without delay

3.1.4 The NPPF outlines a set of core land-use planning principles that should underpin both plan-making and decision-taking, three of which are particularly relevant to this Sustainability Statement. Under paragraph 17, these principles are that planning should:

> - support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change, and encourage the reuse of existing resources, including conversion of existing buildings, and encourage the use of renewable resources (for example, by the development of renewable energy);
> - contribute to conserving and enhancing the natural environment and reducing pollution. Allocations of land for development should prefer land of lesser environmental value, where consistent with other policies in this Framework; and
> - encourage the effective use of land by reusing land that has been previously developed (brownfield land), provided that it is not of high environmental value.

3.1.5 Design is addressed in section 7 of the NPPF, and paragraph 56 states:

> The Government attaches great importance to the design of the built environment. Good design is a key aspect of sustainable development, is indivisible from good planning, and should contribute positively to making places better for people.

3.1.6 Meeting the challenge of climate change is addressed in section 10 of the NPPF, and paragraph 93 notes that planning plays a key role in helping shape places to secure radical reductions in greenhouse gas emissions, minimising vulnerability and providing resilience to the impacts of climate change, and supporting the delivery of renewable and low carbon energy and associated infrastructure. This is central to the economic, social and environmental dimensions of sustainable development.

3.1.7 Further to the above, paragraphs 95 and 96 state:

> To support the move to a low carbon future, local planning authorities should:
>
> - plan for new development in locations and ways which reduce greenhouse gas emissions;
> - actively support energy efficiency improvements to existing buildings; and
> - when setting any local requirement for a building's sustainability, do so in a way consistent with the Government's zero carbon buildings policy and adopt nationally described standards.
>
> In determining planning applications, local planning authorities should expect new development to:
>
> - comply with adopted Local Plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and
> - take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.

3.1.8 Conserving and enhancing the natural environment is addressed in section 11 of the NPPF, and excerpts from paragraph 109 state that the planning system should contribute to and enhance the natural and local environment by:

> - minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures; and
> - preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability.

3.1.9 Paragraph 118 notes that when determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by encouraging opportunities to incorporate biodiversity in and around developments.

3.1.10 Noise is addressed under paragraph 123 which notes that Planning policies and decisions should aim to:

> - avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development; and

- mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions.

3.1.11 Additionally, paragraph 125 notes that by encouraging good design, planning policies and decisions should limit the impact of light pollution from artificial light on local amenity.

3.2 Regional Policy

3.2.1 The London Plan was published in July 2011 and is the overall strategic plan for London, setting out an integrated economic, environmental, transport and social framework for the development of London to 2031. The policies relevant to this report are found in Chapter 5 (and to a lesser extent in Chapter 7) of the London Plan.

3.2.2 The London Plan applies to Major Development only, therefore the policies are not relevant to this development.

3.3 Local Policy

3.3.1 The London Borough of Camden (LBC) require all developments to take measures to minimise the effects of - and adapt to - climate change, and encourages all development to meet the highest feasible environmental standards that are financially viable during construction and occupation.

London Borough of Camden's Core Strategy, November 2010

3.3.2 The London Borough of Camden's Core Strategy sets out the key elements of the Council's planning vision and strategy for the borough. It is the central part of Local Development Framework (LDF) and was adopted in November 2010.

3.3.3 Within the Core Strategy, specific policies set out the Council's approach to managing Camden's growth so that it is sustainable, meeting needs for homes, jobs and services, and protecting and enhancing quality of life and the borough's many valued and high quality places. Section 3 focuses on delivering the key elements of Camden's strategy relating to:

- making Camden more sustainable and tackling climate change, in particular improving the environmental performance of buildings, providing decentralised energy and heating networks, and reducing and managing our water use;
- promoting a more attractive local environment through securing high quality places, conserving our heritage, providing parks and open spaces, and encouraging biodiversity;

- improving health and well-being;
- making Camden a safer place while retaining its vibrancy; and
- dealing with our waste and increasing recycling.

CS13: Tackling climate change through promoting higher environmental standards

3.2.5 Policy CS13 sets out the approach that developers should take when considering energy and carbon reductions for developments:

Reducing the effects of and adapting to climate change

The Council will require all development to take measures to minimise the effects of, and adapt to, climate change and encourage all development to meet the highest feasible environmental standards that are financially viable during construction and occupation by:

a) ensuring patterns of land use that minimise the need to travel by car and help support local energy networks;
b) promoting the efficient use of land and buildings;
c) minimising carbon emissions from the redevelopment, construction and occupation of buildings by implementing, in order, all of the elements of the following energy hierarchy:
    1. ensuring developments use less energy,
    2. making use of energy from efficient sources, such as the King's Cross, Gower Street, Bloomsbury and proposed Euston Road decentralized energy networks;
    3. generating renewable energy on-site; and
d) ensuring buildings and spaces are designed to cope with, and minimise the effects of, climate change.

The Council will have regard to the cost of installing measures to tackle climate change as well as the cumulative future costs of delaying reductions in carbon dioxide emissions.

Local energy generation

The Council will promote local energy generation and networks by:

e) working with our partners and developers to implement local energy networks in the parts of Camden most likely to support them;
f) protecting existing local energy networks where possible (e.g. at Gower Street and Bloomsbury) and safeguarding potential network routes (e.g. Euston Road).

Water and surface water flooding

The Council will make Camden a water efficient borough and minimise the potential for surface water flooding by:

g) protecting our existing drinking water and foul water infrastructure, including Barrow Hill Reservoir, Hampstead

Heath Reservoir, Highgate Reservoir and Kidderpore Reservoir;

h) making sure development incorporates efficient water and foul water infrastructure;
i) requiring development to avoid harm to the water environment, water quality or drainage systems and prevents or mitigates local surface water and down-stream flooding, especially in areas up-hill from, and in, areas known to be at risk from surface water flooding such as South and West Hampstead, Gospel Oak and King's Cross.

Camden's carbon reduction measures

The Council will take a lead in tackling climate change by:

j) taking measures to reduce its own carbon emissions;
k) trialling new energy efficient technologies, where feasible; and
l) raising awareness on mitigation and adaptation measures.

3.2.6 The Camden Core Strategy contains a number of other policies relevant to this report, which are not outlined in full. These policies can be found in the list below, and reference should be made to the original document for further information:

- Policy CS16: Improving Camden's health and well-being; and
- Policy CS18: Dealing with our waste and encouraging recycling.

Camden Development Policies, November 2010

3.2.7 Camden Development Policies contributes towards delivering the Core Strategy by setting out detailed planning policies that the Council will use when determining applications for planning permission, to achieve the vision and objectives of the Core Strategy.

Policy DP22: Promoting sustainable design and construction

3.2.8 Policy DP22 has been developed to provide details on sustainability standards. Within this policy, it states a BREEAM assessment should be prepared for non-residential space, however, given the size of the development a BREEAM assessment is not deemed to be feasible. The policy states, in part:

The Council will require development to incorporate sustainable design and construction measures. Schemes must:

a) demonstrate how sustainable development principles, including the relevant measures set out in paragraph 22.5, have been incorporated into the design and proposed implementation; and
b) incorporate green or brown roofs and green walls wherever suitable.

The Council will promote and measure sustainable design and construction by:

e) expecting non-domestic developments of 500sqm of floorspace or above to achieve "very good" in BREEAM assessments and "excellent" from 2016 and encouraging zero carbon from 2019.

The Council will require development to be resilient to climate change by ensuring schemes include appropriate climate change adaptation measures, such as:

f) summer shading and planting;
g) limiting run-off;
h) reducing water consumption;
i) reducing air pollution; and
j) not locating vulnerable uses in basements in flood-prone areas.

3.2.9 The Camden Development Management Policies contains a number of other policies relevant to this report, which are not outlined in full. These policies can be found in the list below, and reference should be made to the original document for further information:

- Policy DP23: Water;
- Policy DP28: Noise and vibration; and
- Policy DP32: Air quality and Camden's Clear Zone.

Camden Planning Guidance Sustainability (CPG3), September 2013

3.2.10 The Core Strategy is supported by Supplementary Planning Documents and CPG3 contains advice and guidance for developers on ways to achieve carbon reductions and more sustainable developments. It also highlights the Council's requirements and guidelines which support the relevant Local LDF policies, including DP22 as noted above.

3.2.11 Within this document it sets standards for:

- Renewable energy;
- Water efficiency;
- Sustainable use of materials;
- Flooding;
- Adapting to climate change; and
- Biodiversity.

3.2.12 It is stated within the document developments should achieve a 20% reduction in carbon dioxide emissions from on-site renewable technologies. All developments should also be water efficient and look to install efficient water fixtures and fittings.

3.2.13 Materials should be responsibility sourced, and the waste hierarchy should be implemented to prioritise the reduction, re-use and recycling of materials.

4.0 SUSTAINABILITY PRINCIPLES SUMMARY

4.0.1 London is a growing city with a limited supply of land for economic, residential, recreational and natural land uses. Therefore it is essential that developers make the most of the opportunities provided by their site, based on its specific circumstances. Buildings and their surroundings should be designed and built to improve the local and wider environment and minimise their demand on wider resources including land, energy, water and materials. This also helps to minimise the need for expensive physical infrastructure.

4.0.2 Overall, and as noted in the sections below, the proposed development demonstrates that sustainable design standards have been integral to the proposal, and can be applied to both its construction and operation.

4.1 Transport

4.1.1 The site has a Public Transport Accessibility Level (PTAL) rating of 6b, which is considered excellent, and is located in close proximity to a number of public transport facilities. Holborn Underground Station on the Central and Piccadilly lines is located to the east of the proposed development. Tottenham Court Road Underground Station, on the Northern line is located to the west of the proposed development. Local bus routes operate near the site and provide services throughout London including the 168, 38, 96 and 98.

4.1.2 The development does not incorporate car parking or secure cycle storage. The Hoxton Hotel does not currently provide car parking to its users due to its excellent public transport accessibility; it is not anticipated that a cycle storage space would be required, as only the food kiosk would require only one additional employee.

4.2 Air Quality, Noise and Pollution

4.2.1 The design of the proposals has been considered with the wider environment in mind, and as such there will be minimal disruption in terms of water, noise and light pollution upon completion of the development.

4.2.2 The proposed development site lies within an Air Quality Management Area. As the proposed development is classed as minor development, the construction and operational air quality impacts of the proposed development are judged to be insignificant.

4.2.3 Best practise construction mitigation measures will be implemented during construction to reduce air and surface water pollution. The implementation of mitigation measures is expected to be addressed through the reserved matters stage in order to ensure there is no adverse impact on neighbouring buildings.

4.3 Materials and Waste

4.3.1 Waste management and resource efficiency has been considered as part of the sustainable design of the proposed development. The design team will specify materials with recycled and reused content where feasible. The detailed characteristics of the materials to be specified will be determined at the detailed design stage. The specified materials will have high ratings in the BRE Green Guide. It is anticipated that 100% of the timber used for the proposed development will be from FSC sources. Insulation will be specified which has a low embodied environmental impact relative to its thermal properties. Where feasible, pre-fabricated elements will be used for the proposed development. This will be reviewed at the detailed design stage. Reused and recycled construction materials will be specified to the extent feasible.

4.3.2 A Site Waste Management Plan can be prepared for the construction stage. The plan will provide guidance on the approach to waste management for the proposed development. Where possible, construction waste will be diverted from landfill.

4.3.3 External and internal waste storage bins will be provided for the development and will be designed to be easily accessible for use by occupants and for the storage and removal of waste and recyclable materials.

4.4 Water Consumption, Surface Water Run-Off and Flood Risk

4.4.1 The LBC Planning Guidance states development should seek to protect and conserve water supplies, which should be achieved through minimising the use of mains water.

4.4.2 Water fixtures and fittings will be specified to ensure there is an improvement over baseline building water consumption through the specification of low flow taps and dual flush toilets. The precise specification of water fittings and fixtures can be made at the detailed design stage.

4.4.3 The proposed development site is not located within an area deemed to have Flood Risk, as noted by the Environment Agency flood risk map tool, and will ensure no increase in surface water runoff compared to the pre-developed site.

4.5 Biodiversity and Ecology

4.5.1 As stated in the Planning Guidance document, all development should incorporate green and brown roofs unless demonstrated that it is not possible or appropriate. Due to the proposed layout, green and brown roofs are not feasible due to the openable nature of the roof. There is landscaping currently implemented at the front of the building in the form of planting.

4.5.2 The site is very limited in ecological value due to the lack of natural and semi-natural habitats. The proposal will have a neutral impact upon biodiversity and ecology.

5.0 ENERGY STRATEGY

5.0.1 This section of the report has been prepared to ensure that the relevant National, Regional and local energy policies can be achieved on by the Hoxton Hotel Extension proposed development.

5.0.2 London Borough of Camden's Core Strategy Policy CS 13 – *Tackling climate change through promoting higher environmental standards*, encourages all developments to introduce energy efficiency measures to reduce the effects and adapt to climate change.

5.0.3 As the proposed development is less than 500m^2, the project does not need to comply with LP Policy 5.2 (35% reduction in carbon emissions). However it is required to demonstrate compliance over 2013 Building Regulations, by showing improvement of the Building Emission Rate (BER) over Target Emission Rate (TER).

5.0.4 This section has been prepared by following London Plan's recommended energy hierarchy: to minimise energy demand (Be Lean), supply of energy (Be Clean), and use of renewables (Be Green).

5.0.5 This section assess the energy efficiency measures of the proposed extension of Hoxton Hotel and the low carbon options for supplying energy to the development before examining the potential for renewable energy technologies to reduce carbon emissions of the development.

5.0.6 All energy and carbon figures have been calculated using approved Simplified Building Energy Model (SBEM) software to demonstrate compliance with Approved Document Part L2A (2013).

5.0.7 Further detailed results and a sample BRUKL report can be found in Appendix A.

5.1 Site Energy and Notional Baseline

5.1.1 Metropolis Green has assessed the site energy demands of the proposed Hoxton Hotel Extension against current 2013 Building Regulations, to establish the Notional Baseline and TER.

5.1.2 The energy hierarchy promotes a 'regulated' energy approach to calculating the energy demand and carbon baseline of the development. The baseline therefore includes the energy consumed in the operation of the space heating/cooling, hot water systems, ventilation and all internal lighting.

5.1.3 Reported separately are the carbon savings from all electrical appliances and other occupant small power demands, which are not covered by Building Regulations, this is called 'unregulated' energy.

5.1.4 Table 1 provides a summary of the Notional Baseline results for the proposed extension at Hoxton Hotel, against regulated and unregulated carbon emissions

Table 1 Notional Baseline

Notional Baseline	Total
Un-Regulated Carbon Emissions (t/CO2/yr)	1.2
Regulated Carbon Emissions (t/CO2/yr)	1.7

5.2 Energy Efficiency Measures

5.2.1 Metropolis Green have worked with the project architects, Gundry & Ducker to determine the most efficient and feasible way to reduce the carbon emissions through passive and active design measures.

5.2.2 Improving the fabric and services efficiency is the most effective way of reducing carbon emissions as these measures will last the lifetime of the building. Reducing the CO_2 emissions in turn reduces the amount of low carbon and renewable energy technologies required to comply with regulations and policies, as well as lowering costs.

5.2.3 The thermal performance of the building fabric for this baseline is significantly better than the limiting parameters of Building Regulations Part L, improving overall fabric efficiency and reducing carbon emissions for the lifetime of the development.

5.2.4 Table 2 details the fabric performance of the extension at Hoxton Hotel development.

Table 2 Building Fabric Performance

Specification	Notional baseline	Efficient Baseline
External Wall U-value	0.26	0.21
Ground Floor U-value	0.25	0.13
Roof U-value	0.25	0.17
Windows & Rooflight U-values	1.6	1.4

5.2.5 Passive and active design measures such as fabric performance, air tightness and mechanical ventilation will be utilised in the proposed extension at Hoxton Hotel development to prevent overheating and subsequent carbon emissions.

5.2.6 Table 2 outlines the design measures which will be utilised by the proposed extension at Hoxton Hotel development.

Table 3 Energy Efficiency Design Measures

Design Measures	Specific Project Measures
Thermal mass parameter	Medium (250kj/m^2k)
Air Permeability	5 m^3/hrm^2 @ 50 Pa
Domestic Hot Water System	Instant electric water heaters
Space Heating System	Gas boiler 91% efficiency
Space Cooling System	Multi Split System with ASHP cooling SEER 3.5 (e.g. Mitsubishi PUHZ-SW75VHA or similar)
Ventilation System	MVHR system with 75% efficiency and SFP 1.2 W/l.s or lower
Average luminaire efficiency (lm/W)	Luminaire efficacy 90 lm/W, photoelectric control, metering with 'out of range' alarm

5.2.7 As a result of the above energy efficiency measures and improvements, the first stage of the energy hierarchy, to be lean and use energy efficiently, is complete. The new baseline has been calculated and is referred to as the Efficient Baseline.

5.2.8 Table 4 shows that through the high fabric performance and energy efficiency design an improvement of 26.7% of BER over TER can be gained. Furthermore an energy demand reduction of 0.5t/CO_2/yr (26.7%) can be saved.

Table 4 Efficient Baseline

Efficient Baseline	Total
Target Emission Rate (TER)	30.7
Building Emission Rate (BER)	22.5
% Improvement over 2013 BRs(BER/TER)	26.71%

5.3 Overheating and Cooling

5.3.1 Through the application of energy efficiency design, the design team have worked to ensure that the risk of summer overheating is minimised in line with the 'cooling hierarchy'.

5.3.2 Good natural daylighting within the proposed development will create significant benefits in terms of reduced electrical use for lighting, solar gains to reduce winter heating consumption and create a healthier, more pleasant environment.

5.3.3 A combination of high levels of fabric performance and insulation has been implemented, resulting in low U-values. This has resulted in minimising solar gain and subsequent internal heat generation, reducing the building's summer overheating risk.

5.3.4 Due to the nature of the development it has not been possible to specify openable windows to provide natural ventilation. Therefore to meet comfort cooling requirements of the building users, an Air Source Heat Pump (ASHP), with a cooling SEER of 3.5, in combination with a Mechanical Ventilation and Heat Recovery (MVHR) unit, has been specified.

5.3.5 The ASHP will be detailed fully in section 5.5.7. The MVHR unit will have zonal supply and extract, with a Specific Fan Power (SFP) of 1.2W/ls and Heat Recovery (HR) efficiency of 75%.

5.4 Heating Infrastructure Including CHP: Be Lean

5.4.1 The Mayor's energy hierarchy and London Plan Policy 5.6 require all major developments to demonstrate that the proposed energy systems have been selected in accordance with the following hierarchy:

1. Connection to existing or planned area wide, low carbon heat distribution networks;
2. Site wide heat networks;
3. Combined Heat and Power (CHP).

5.4.2 However due to the small size of the project 55m^2, it would not be feasible to connect to district heat network due to the associated cost and low heat demand of the proposed scheme.

5.4.3 The Hoxton Hotel is currently in the process of outlining the installation a Combined and Heat and Power (CHP) plant. It is possible to connect to this CHP, however the unit has yet to be fully installed and commissioned, therefore in the meantime an ASHP will be utilised to provide heat and cooling to the development.

5.5 Renewable Energy

5.5.1 The third stage of the energy hierarchy refers to the production of renewable energy, which relates to London Plan Policy 5.7.

5.5.2 Each of the approved renewable energy technologies have been appraised, examining the suitability to the site and potential for delivering CO_2 reductions.

5.5.3 London Plan's approved renewable energy technologies include:

- Photovoltaics
- Solar Water Systems
- Biomass Heating
- Air and Ground Sourced Heating/Cooling
- Wind

5.5.4 The choice of technology will be dependent upon a range of factors including: orientation, height, window size, surrounding buildings and environment, site size and layout, geology, conservation and biodiversity.

5.5.5 Site analysis and calculations have determined that the ASHP providing both space heating and cooling to be the most suitable renewable energy technology for the development.

5.5.6 The following section sets out the strategy for implementing the ASHP and the carbon reductions predicted for the solution.

5.6 Air Source Heat Pump

5.6.1 An ASHP is a system which transfers heat from outside to inside a building, or vice versa. Under the principles of vapour compression refrigeration, an ASHP uses a refrigerant system involving a compressor and a condenser to absorb heat at one place and release it at another.

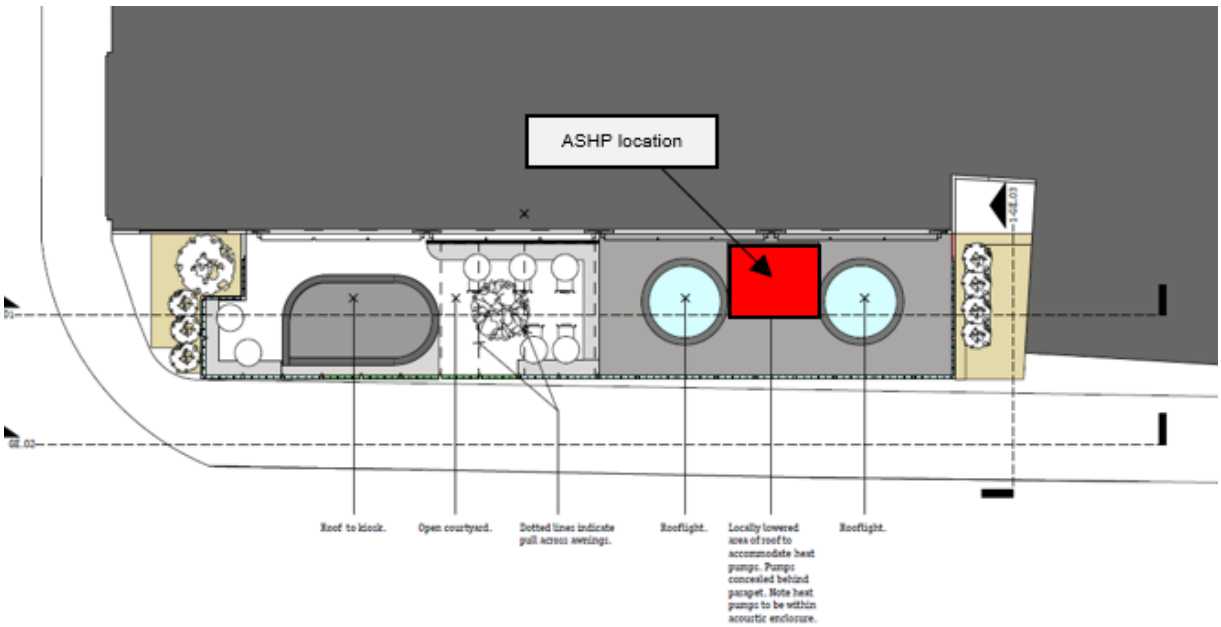
5.6.2 Heat produced in this way can be used to heat radiators, underfloor heating systems, or warm air convectors and hot water in dwellings. A single system can be designed to transfer heat in either direction, to heat or cool the interior of the building in winter and summer respectively.

5.6.3 Heat pumps have some impact on the environment as they need electricity to run, but the heat they extract from the ground, air, or water is constantly being renewed naturally. In addition, they produce more units of energy than the electricity they consume which is defined as the

Coefficient of Performance (COP) and therefore deliver higher carbon savings than traditional heating technologies.

5.6.4 The ASHP will be used to provide space heating and cooling for the proposed The Hoxton Hotel Extension development, through warm air convectors. These units will be located on the roof of the proposed development, shown in Figure 2 and Appendix B. The final selected plant may differ from the above, and will be subject to the detailed heating and cooling design, however it shall have an equivalent or better performance specification.

Figure 2 ASHP location



5.6.5 The installed ASHP is required to comply with the minimum performance standards as set out in the Enhanced Capital Allowances[1] (ECA). Selection of particular ASHP product. In addition, the final selected ASHP will comply with all other relevant issues as outlined in the Microgeneration Certification Scheme Heat Pump Product Certification Requirements[2].

5.6.6 Unlike gas and oil based systems, air source heat pumps do not require regular maintenance or annual safety inspections. Additionally a heat pump has a reasonable life expectancy of 20–25 years, typically twice that of a boiler. The investment costs can be recovered over a longer period meaning the ownership costs over the working life of the system are demonstrably lower.

5.6.7 The ASHP selected for this analysis is a highly efficient Mitsubishi PUHZ-SW75VHA (or similar), with a SCoP of 3.0 and SEER of 3.5.

[1] http://etl.decc.gov.uk
[2] http://www.microgenerationcertification.org

5.6.8 As mentioned previously, the ASHP will operate alongside a MVHR providing zonal supply and extract serving individual rooms. The MVHR will have a SFP of 1.2 and HR efficiency 75%.

5.6.9 The ASHP saves 0.1t/CO_2/yr, a reduction of 10.7% from the Efficient Baseline.

5.6.10 Table 5 shows the carbon emissions, which has been achieved through the introduction of the ASHP. As shown the improvement over the 2013 Building Regulations is 29.5%, therefore meeting the LP and LBC policy requirements.

Table 5 Renewable Baseline

Renewable Baseline	Total
Target Emission Rate (TER)	28.5
Building Emission Rate (BER)	20.1
% Improvement over 2013 BRs (BER/TER)	29.5%

6.0 CONCLUSIONS

6.0.1 This Sustainability and Energy Statement demonstrates that the proposed development at the Hoxton Hotel in the London Borough of Camden meets the sustainability principles set out in LBC's Core Strategy, Managing Development Policies and CPG3: Sustainability.

6.0.2 The sustainability strategy focuses on the implementation of an energy strategy and sustainable design and construction measures to ensure the proposed development meets the sustainability principles outlined within LBC local planning policy and guidance, to the extent feasible given the minor nature of the proposed extension.

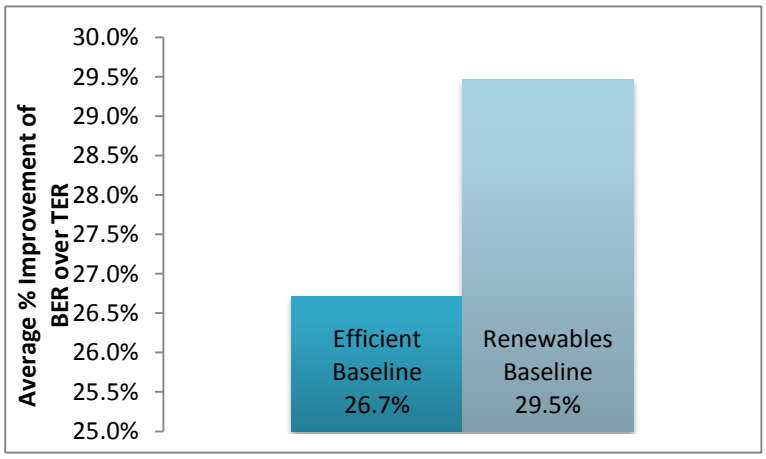
6.0.3 As highlighted in Section 5.0 of this report, the proposed development can achieve a 29.5% improvement over 2013 Building Regulations, therefore meeting the requirements of LP Policy 5.2 and LBC's Policy CS13.

6.0.4 In conclusion, the design team has considered the site's potential environmental impacts and this report details how those impacts will be managed and mitigated. The approach to designing and constructing a sustainable development will result in a development that will comply with the Council's policies on sustainability.

Table 6 Improvement over 2013 BRs (BER/TER)

Notional Baseline	**Un-Regulated Carbon Emissions (tCO2/yr)**	1.2
	Regulated Carbon Emissions (tCO2/yr)	1.7
Efficient Baseline	**% Improvement over 2013 BRs (BER/TER)**	26.71%
Renewable Baseline	**% Improvement over 2013 BRs (BER/TER)**	29.5%

Figure 3 Non-residential BER over TER improvements



APPENDIX A – CALCULATIONS AND SAMPLE BRUKL REPORT

Efficient Baseline

Efficient Baseline								Gas Consumption	Electricity Grid	SBEM 2013		Baseline CO_2 Emissions	Regulated CO_2 Emissions	Unregulated CO_2 Emissions	TER/BER % Improvement
Description	Floor area (m2)	Space Heating (Main) (kWh/an)	DHW (kWh/an)	Cooling (SBEM) (kWh/an)	Lighting (kWh/an)	Aux (kWh/an)	Un-Reg (kWh/an)	kWh.annum	kWh.annum	TER	BER	kgCO2/annum	kgCO2/annum	kgCO2/annum	
Offices	55	2,154	159	601	677	94	2,320	2,313	3,692	30.70	22.50	1,689	1,238	1,204	
Total	55	2,154	159	601	677	94	2,320	2,313	3,692	30.7	22.5	1,689	1,238	1,204	26.71%

Renewable Baseline

Renewable Baseline								Gas Consumption	Electricity Grid	SBEM 2013		Baseline CO_2 Emissions	Regulated CO_2 Emissions	Unregulated CO_2 Emissions	TER/BER % Improvement
Description	Floor area (m2)	Space Heating (Main) (kWh/an)	DHW (kWh/an)	Cooling (SBEM) (kWh/an)	Lighting (kWh/an)	Aux (kWh/an)	Un-Reg (kWh/an)	kWh.annum	kWh.annum	TER	BER	kgCO2/annum	kgCO2/annum	kgCO2/annum	
Offices	55	654	159	601	677	94	2,320	813	3,692	28.50	20.10	1,568	1,106	1,204	
Total	55	654	159	601	677	94	2,320	813	3,692	28.5	20.1	1,568	1,106	1,204	29.5%

APPENDIX B – LOCATION OF ASHP UNIT